VERMONT
DEPARTMENT OF HEALTH

Cancer Registry
Chronic Disease Epidemiology

Melanoma in Vermont

May 2006

Background

In the United States melanoma is the fifth most commonly diagnosed cancer in men and women. Nationally, the number of new cases of melanoma has more than doubled in the past 30 years.

The two most common forms of skin cancer are basal cell and squamous cell carcinomas. Although more than one million new cases of these non-melanomas are estimated to occur each year in the U.S., cancer registries do not routinely track them. Non-melanomas rarely spread elsewhere in the body and are less likely than melanomas to be fatal.

Melanoma is a form of skin cancer that occurs in the melanocytes, which are cells in the outer layer of skin that gives skin its tan coloring and typically protects deeper layers of the skin from harmful sun exposure. When the skin is exposed to sunlight, the melanocytes in the outer layer of skin make more pigment, which causes the skin to darken. Melanomas develop when melanocytes undergo malignant transformation, becoming abnormal, grow uncontrollably, and can aggressively invade surrounding tissues.

Melanomas are the most serious form of skin cancer. Melanoma can be treated early, but if left untreated, a majority of melanomas will eventually spread to other parts of the body and become much more difficult to treat.

Vermont Facts, 1998-2002

- **Incidence:** Melanoma is the fifth most common cancer diagnosed in men and women in Vermont. Each year approximately 91 melanomas are diagnosed in men, and 75 melanomas are diagnosed in women.
- **Mortality:** Each year, approximately 14 men and 6 women die from melanoma.
- **Vermont vs. U.S.:** Vermont men and women have significantly higher incidence rates for melanoma than male and female rates for the U.S[†].
- **Yearly Trends:** From 1998 to 2002, there has been no significant change in male or female melanoma incidence or mortality in Vermont or the U.S.
- **Gender:** In Vermont, both incidence and mortality of melanoma are higher among men than women. The incidence of melanoma is about 1.5 times higher among men than women, and the mortality of melanoma is about three times higher among men than women in Vermont. Melanoma is more likely to occur on the head, neck, or trunk in men. In women, melanoma is more likely to be found on the arms or legs.
- **Age:** Incidence of melanoma increases with age. In Vermont, 95% of melanoma cases are diagnosed in people age 30 and older. Men aged 85 and older have the highest age-specific incidence of melanoma.
- **County:** Melanoma incidence rates for males in Bennington, Chittenden, and Lamoille County are significantly higher than the U.S. For females, melanoma incidence rates in Bennington and Chittenden County are significantly higher than the U.S.

[†] U.S. incidence and mortality rates for whites, rather than those for all races, are used for comparison because racial minority groups were estimated to make up 3.1 percent of the total Vermont population, compared with the total U.S. non-white population of 19.6 percent in 2004.

Melanoma Incidence Compared with Other Cancers

Table 1. The most commonly diagnosed cancers in males and females – Vermont, yearly averages 1998-2002.

Male Cancer Site	Cases (per year)	Percent (per year)	Female Cancer Site	Cases (per year)	Percent (per year)
Prostate	467	29.3%	Breast	477	31.4%
Lung	242	15.2%	Colon and Rectum	179	11.8%
Colon and Rectum	176	11.1%	Lung	173	11.4%
Bladder	110	6.9%	Uterus	102	6.7%
Melanoma	**91**	**5.7%**	**Melanoma**	**75**	**4.9%**
All Sites	1,593	100%	All Sites	1,517	100%

All rates are age-adjusted to the 2000 U.S. standard population and exclude basal and squamous cell skin cancers, and in situ carcinomas except urinary bladder.

- During 1998-2002, an average of 1,593 men and 1,517 women were diagnosed with invasive cancer each year in Vermont. Of those, an average of 91 men and 75 women were diagnosed with melanoma per year.
- In Vermont and the United States, melanoma is the fifth most common cancer diagnosed in men and women.
- Melanoma accounted for approximately 5% of all cancers diagnosed in men and women in Vermont during 1998-2002.

Melanoma in Vermont Compared to the U.S.

Table 3. Rates of melanoma – Vermont and United States, per 100,000, yearly averages, 1998-2002.

	Incidence (95% CI)	Mortality (95% CI)
VT Males	32.2 (*29.3, 35.5*)	5.2 (4.0, 6.6)
U.S. Males	27.0	4.3
VT Females	22.9 (*20.6, 25.4*)	1.7 (1.2, 2.6)
U.S. Females	18.6	2.0

All rates are age-adjusted to the 2000 U.S. standard population. The U.S. mortality rates are based on the Vital Statistics System of the United States Public Use database. U.S. rates are 1998-2002 white population mortality rates. The U.S. incidence rates are based on the SEER Cancer Incidence Public Use Database. U.S. SEER incidence rates are 1998-2002 white population rates.

- Between 1998 and 2002, the melanoma incidence rate for males and females in Vermont was significantly higher than the U.S. Mortality rates among Vermont men and women did not differ significantly from the U.S.
- The incidence of melanoma was about 1.5 times higher among Vermont men than women during 1998-2002. This difference is statistically significant.
- During 1998-2002, an average of 14 male deaths and 6 female deaths were due to melanoma.
- The mortality of melanoma was about 3 times higher among Vermont men than women during 1998-2002. This difference is statistically significant.

Melanoma Cancer Incidence in Vermont by County

Table 4. Rates of melanoma – Vermont by county, per 100,000, 1998-2002.

County	Males	Females	County	Males	Females
Addison	30.5	22.0	Lamoille	51.1*	28.1
Bennington	38.8*	29.3*	Orange	33.3	13.9
Caledonia	34.2	21.3	Orleans	28.0	15.0
Chittenden	39.2*	30.2*	Rutland	23.7	17.2
Essex	^	^	Washington	29.0	18.4
Franklin	21.5	20.4	Windham	34.9	23.8
Grand Isle	^	^	Windsor	31.9	21.4

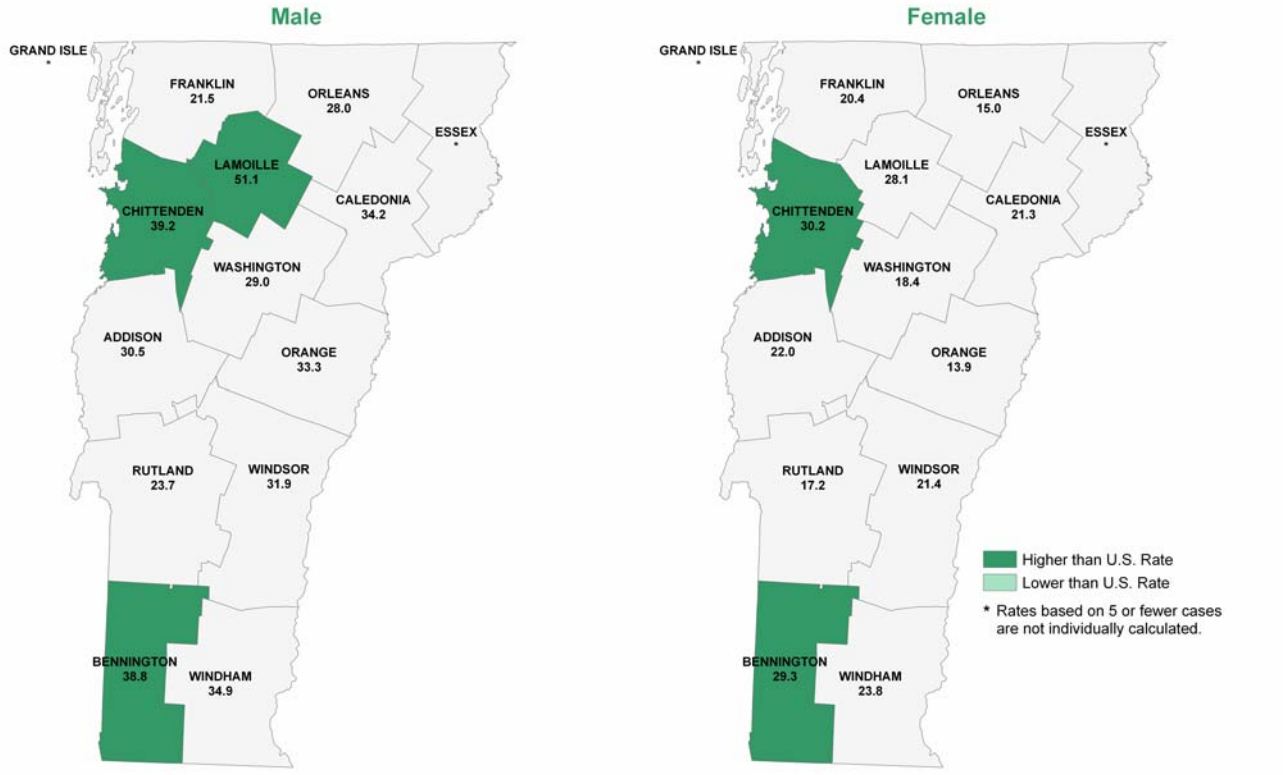
All rates are age-adjusted to the 2000 U.S. standard population.

** Statistically higher than the U.S.*
^ Number of cases is fewer than 6.

- During 1998-2002, the male melanoma incidence rate in Bennington, Chittenden, and Lamoille County was significantly higher than the U.S.

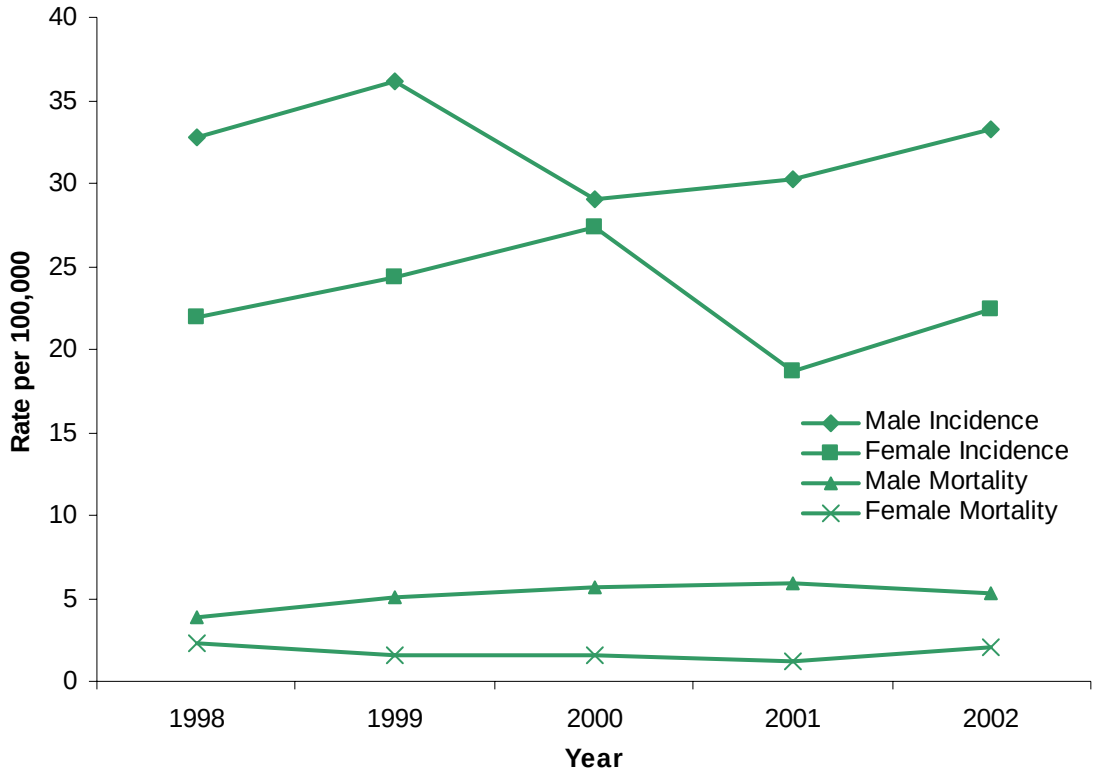
- During 1998-2002, the female melanoma incidence rate in Bennington and Chittenden County was significantly higher than the U.S.

Melanoma Incidence by County
Per 100,000, 1998-2002



Melanoma Yearly Trends

Figure 1. Incidence and mortality of melanoma, males and females – Vermont, 1998-2002.



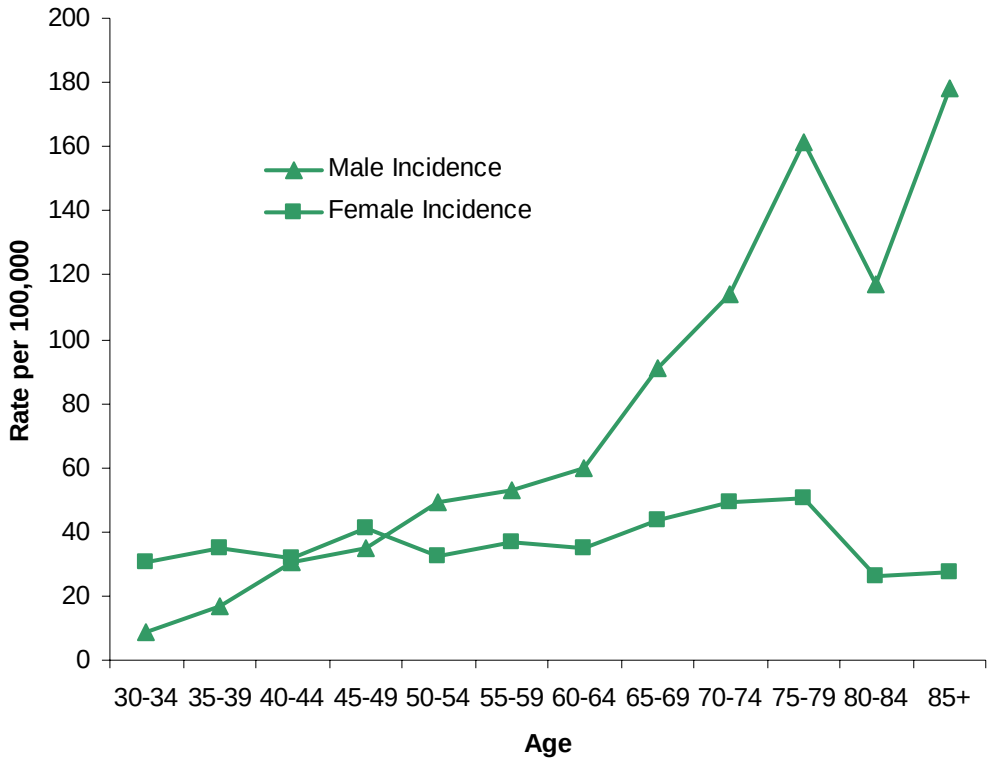
	1998	1999	2000	2001	2002
Male Incidence	32.8	36.2	29.0	30.2	33.3
Female Incidence	21.9	24.3	27.3	18.7	22.4
Male Mortality	3.8	5.0	5.7	5.9	5.3
Female Mortality	2.3	1.5	1.6	1.3	2.1

All rates are per 100,000 and are age-adjusted to the 2000 U.S. Standard population.

- From 1998 to 2002, there is no significant change in male or female melanoma incidence in Vermont or the U.S.
- From 1998 to 2002 there is no significant change in male or female melanoma mortality in Vermont or the U.S.

Melanoma Incidence and Age

Figure 2. Melanoma cancer incidence rates, males and females by age – Vermont, 1998-2002.



Age Group	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
Males	9.0	17.1	30.6	34.9	49.2	53.1	60.0	91.0	113.9	161.3	117.2	178.1
Females	30.8	34.9	32.0	40.9	32.6	36.6	35.2	43.6	49.3	50.5	26.3	27.4

All rates are age-adjusted to the 2000 U.S. standard population. From 1998-2002, rates for Vermonters younger than 30 years old are not shown. Because of the small number of cases in each age group and gender, these data are not presented. Rates are not calculated when the number of cases in an age group is less than 6.

- In Vermont, 95% of melanoma cases are diagnosed in people age 30 and older.
- During 1998-2002, men age 85 and older had the highest age-specific incidence of melanoma cancer, at a rate of 178.1 per 100,000. Women age 75-79 had the highest age specific incidence of melanoma, at a rate of 50.5 per 100,000.
- During 1998-2002, the incidence of melanoma was approximately 3 times higher among Vermont women age 30-34 than men in the same age group. The incidence was 2 times higher among Vermont women age 25-29 and women 35-39 than men in the same age group. These differences are statistically significant.
- Vermont men over 50 have significantly higher incidence rates compared to Vermont women over 50.

Melanoma Risk Factors

The chance of developing melanoma increases with age, but the condition affects people of all age groups and is one of the most common cancers in adults aged 20 to 49. Some of the factors associated with an increased risk of developing melanoma are:

- UV Radiation: Sources of UV radiation are natural and artificial sunlight, like tanning booths and sunlamps. Excessive exposure to UV radiation places a person at greater risk for melanoma.

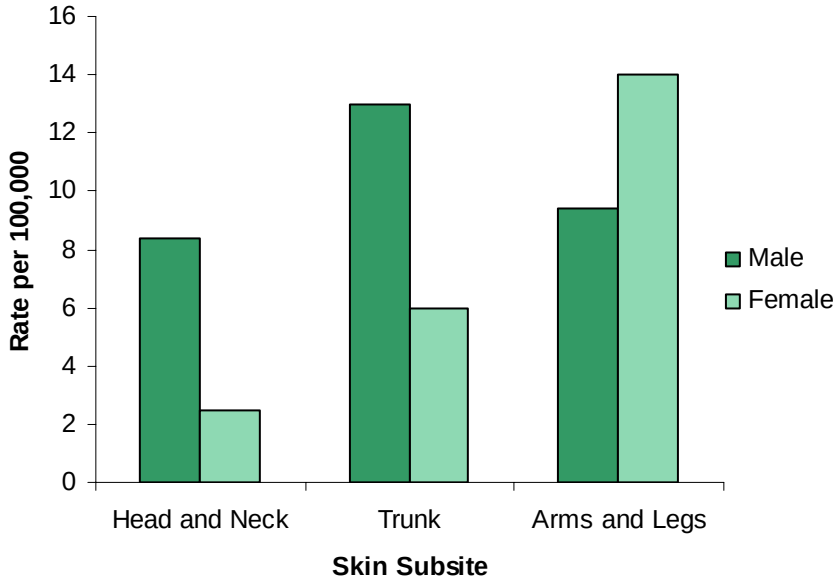
- Fair Skin: In the U.S., rates are more than 10 times higher in whites than in African Americans. People with fair skin, red or blonde hair, or who burn easily are at greater risk for melanoma.

- Severe, blistering sunburns: People who have had at least one severe, blistering sunburn as a child or teenager are at increased risk of melanoma.

- Unusual Moles: Having an atypical mole increases a person's risk for melanoma. Most people have moles, and almost all moles are harmless. Atypical moles' appearance is different from common moles. They are generally larger than ordinary moles and have irregular and indistinct borders. Their color is frequently not uniform and the texture is usually flat but may be raised above the skin surface. It is important to watch for changes in a mole – such as its size, shape, or color – that suggest a melanoma may be developing. Be sure to show your doctor any area that concerns you. Having many moles (greater than 50) can increase a person's risk for melanoma.

- Family or Personal History: Approximately 10 percent of people with melanoma have a mother, father, brother, sister, or child with melanoma. This could be due to shared lifestyles of family members or a shared genetic susceptibility. Being treated for a previous melanoma puts a person at a greater risk of developing a second melanoma.

Figure 3. Melanoma subsite by gender, males and females – Vermont, 1998-2002.



- Among Vermonters, melanoma is more likely to occur on the head, neck, or trunk in men, while melanoma is more likely to be found on the arms or legs of women.

Melanoma and Children

The occurrence of melanomas in childhood is rare but possible. Of the estimated 166 cases of melanoma diagnosed in Vermont each year, fewer than 2 percent occur in individuals under the age of 20. Although typically diagnosed in a person's 20s to 40s, melanoma can occur at any age. Parents should be aware of, and monitor with their child's physician, any skin changes.

Too much sun exposure in youth plays a large role in the risk of skin cancer later in life. Both exposure to ultra violet (UV) radiation and sunburns during childhood increase the risk of developing melanoma, the most serious form of skin cancer, later in life. Gaining in popularity, artificial tanning equipment emits UV radiation and is considered carcinogenic and may expose individuals to 5 times as much UV radiation as the sun. The effects of exposure accumulate over time.

Melanoma Prevention and Screening

Reducing exposure to ultraviolet (UV) radiation, such as from the sun and tanning booths, can decrease an individual's risk of developing skin cancer. Ways to protect yourself from UV rays:

- Limit direct sun exposure during midday. Plan activities out of the sun during 11 am and 3 pm.
- Cover up. Wear protective clothing (such as long sleeves and hats) when exposed to sunlight.
- Wear a hat. A hat with at least a 2- to 3-inch brim all around is ideal.
- Wear sunglasses that block UV rays.
- Use a waterproof sunscreen with a Sun Protection Factor (SPF) of 15 or higher; use it regularly and properly, reapplying often – at least once every 2 hours.
- **Never** use tanning booths, tanning parlors or sunlamps.
- Avoid the sun when taking drugs which make your skin more sensitive to light (photosensitive drugs), including antibiotics such as tetracycline, tretinoin (Retin A), sleeping pills and diuretics (water pills).

Melanoma is largely preventable when sun protective practices and behaviors are consistently used. As part of the Healthy Vermonters 2010 objectives, Vermont set a goal to increase the percentage of people (age 18+) who use at least one protective measure to decrease their risk of skin cancer. The 2001 Vermont Behavioral Risk Factor Surveillance System can be used to evaluate progress toward meeting this objective. Data show that of Vermonters age 18 and over:

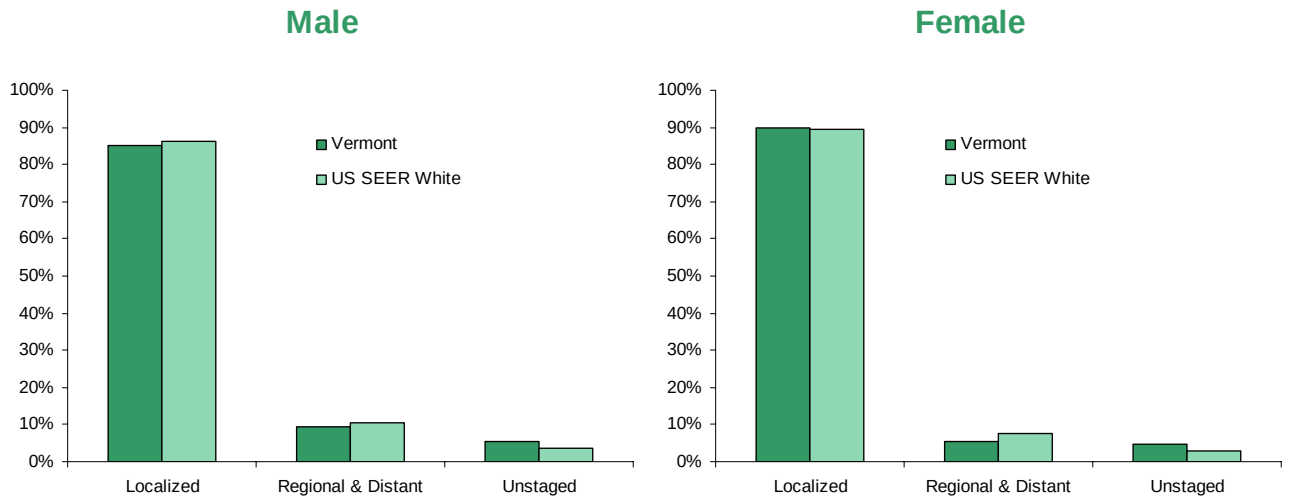
- 76 percent of Vermont adults use at least one protective measure to decrease their risk of skin cancer.

Experts do not agree whether to recommend routine screening for skin cancer by total skin examination. Generally, it is recommended that people with risk factors talk with their physician about skin cancer, the symptoms to watch for, and a schedule for checkups.

Melanoma Cancer and Stage at Diagnosis

If a melanoma is diagnosed at an earlier stage before the cancer has deeply invaded the skin or spread to nearby lymph nodes or other parts of the body, the chances for survival are greater. Nationally, 98% of men and women whose melanoma is diagnosed in a localized stage survive their cancer for at least five years. Five year survival rates for regional and distant stage melanoma cancer are 60% and 14%, respectively.

Figure 3. Distribution of melanoma cases by stage at diagnosis*, males and females – Vermont and the United States, 1998-2002.



**Data only includes malignant, invasive, melanoma cases. Staging categories for regional and distant stages are combined due to coding changes that occurred with cases diagnosed 2001 and forward.*

- During 1998-2002, 85% of melanoma cancers were diagnosed among Vermont men at the early stage (localized) and 9.5% were diagnosed at a regional or late stage. In the U.S., 86% of melanoma cancers were diagnosed at the early stage and 10% were diagnosed at a regional or late stage among white men.

- During 1998-2002, 90% of melanoma cancers were diagnosed among Vermont women at the early stage (localized) and 5% were diagnosed at a regional or late stage. In the U.S., 90% of melanoma cancers were diagnosed at the early stage and 7% were diagnosed at a regional or late stage among white women.

- During 1998-2002 there is no significant difference between Vermont and the U.S. for stage at diagnosis.

Data Sources

Vermont Cancer Registry: The Vermont Cancer Registry is a central bank of information on all cancer cases diagnosed or treated in Vermont since January 1, 1994. The registry enables the state to collect information on new cases (incidence) of cancer. Previously, the state only kept records on deaths from cancer. The information maintained by the registry allows the Health Department to study cancer trends and improve cancer education and prevention efforts. Suggested Citation: Vermont Department of Health Cancer Registry, 1998-2002. The Vermont Cancer Registry can be contacted at 802-865-7749.

Vermont Vital Statistics: In Vermont, towns are required to file certified copies of death certificates with the Department of Health for all deaths occurring in their jurisdictions. The Health Department is responsible for maintaining the vital statistics system. Suggested Citation: VT Department of Health Vital Statistics System, 1998-2002.

Behavioral Risk Factor Surveillance System: Since 1990, Vermont and 49 other states and three territories track risk behaviors using a telephone survey of adults called the Behavioral Risk Factor Survey. Suggested Citation: Centers for Disease Control and Prevention (CDC). Behavioral Risk Factor Surveillance System Survey Data. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2001.

Surveillance, Epidemiology, and End Results: The National Cancer Institute funds a network of Surveillance, Epidemiology and End Results (SEER) registries. The SEER Program currently collects and publishes cancer incidence and survival data from 14 population-based cancer registries and three supplemental registries covering approximately 26 percent of the U.S. population. These rates are used to estimate the U.S. cancer incidence rates. U.S. incidence is based on the SEER 9 Registries white rates. Suggested Citation: Ries LAG, Eisner MP, Kosary CL, Hankey BF, Miller BA, Clegg L, Mariotto A, Feuer EJ, Edwards BK (eds). SEER Cancer Statistics Review, 1975-2002, National Cancer Institute. Bethesda, MD, 2005. http://www.seer.cancer.gov/csr/1975_2002

U.S. Vital Statistics: The U.S. Public Use Database Vital Statistical System maintains the U.S. mortality rates. Rates presented in this report are for the U.S. white population and were obtained using CDC Wonder. Suggested Citation: United States Department of Health and Human Services (U.S. DHHS), Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS), Office of Analysis, Epidemiology, and Health Promotion (OAEHP), Compressed Mortality File (CMF) compiled from CMF 1968-1988, Series 20, No. 2A 2000, CMF 1989-1998, Series 20, No. 2E 2003 and CMF 1999-2002, Series 20, No. 2G 2004 on CDC WONDER On-line Database.

Technical Notes and Definitions

Age Adjustment: All rates in this document are age-adjusted to the 2000 U.S. standard population. This allows the comparison of rates among populations having different age distributions by standardizing the age-specific rates in each population to one standard population.

Incidence: Incidence refers to the number or rate of newly diagnosed cases of cancer. The incidence rate is calculated as the number of new cancers diagnosed in the state during one year divided by the number of residents in the state during the same year. The incidence data presented in this report were coded using the International Classification of Disease for Oncology (ICD-O) coding system. Melanoma cases were defined as invasive neoplasms with ICD-O-3 codes of C44.0-C44.9 with the exception of histologies 9590-9989 (or equivalent for older data).

Mortality: Mortality refers to the number or rate of deaths from cancer. The mortality data presented here were coded using the International Classification of Diseases (ICD). From 1999 on, cancer mortality site groupings are defined by NCHS and based on ICD-10 classification. Cause of death before 1999 was coded according to ICD-9. Comparability ratios were applied to pre-1999 mortality rates to allow for continuity in trends across the ICD revisions.

Race: U.S. incidence and mortality rates for whites, rather than those for all races, are used for comparison because racial minority groups were estimated to make up 3.1 percent of the total Vermont population, compared with the total U.S. non-white population of 19.6 percent in 2004. Nationwide, whites have a higher risk compared to people of other races for female breast, melanoma, and bladder cancer incidence. Whites have a lower risk compared to other races for prostate, colorectal, and cervical cancer. The much smaller

populations of Vermont residents of other races may have very different risks of these cancers. Combining data over many years will be required to determine cancer rates.

Confidence Intervals: A confidence interval is a range of values within which the true rate is expected to fall. If the confidence intervals of two groups (such as males and females, or Vermont and the U.S.) overlap, then any difference between the two rates is not statistically significant. All rates in this report are calculated at a 95 percent confidence level. For example, the age adjusted Vermont male cancer incidence rate is 580.9 *(567.8, 594.2)* per 100,000 and the Vermont female cancer incidence rate is 446.8 *(436.7, 457.0)*. Since the Vermont female confidence interval and the Vermont male confidence interval do not overlap, a statistical difference exists between the two rates.

Small Numbers: Rates are not presented in this report if the number of cases is fewer than 6.

Suggested Citation

Vermont Department of Health, Melanoma in Vermont, 2006.

Acknowledgements

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Vermonters Taking Action Against Cancer (VTAAC)

VTAAC is a statewide partnership of more than 150 individuals, professionals and organizations working together to reduce the impact of cancer on all Vermonters. A comprehensive strategic plan addressing prevention, detection, treatment, survivorship needs, and palliative care related to Vermont's leading cancers is available at http://healthvermont.gov/cancer or call (802) 865-7706.